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| APPLICATION NO.   | FILING DATE | FIRST NAMED INVENTOR  | ATTORNEY DOCKET NO.          | CONFIRMATION NO.              |
|---|-------------|-----------------------|------------------------------|-------------------------------|
| 10/698,217  | 10/31/2003  | Bhima Rao Vijayendran | BAT 0033<br>NA/40078.251/127 | 1497                          |
| 7590  | 01/24/2006  |                       |                              | EXAMINER<br>CORDRAY, DENNIS R |
| DINSMORE & SHOHL LLP<br>Suite 500<br>One Dayton Centre<br>Dayton, OH 45402-2023 |             |                       | ART UNIT<br>1731             | PAPER NUMBER                  |

DATE MAILED: 01/24/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

|                 |                            |  |
|-----------------|----------------------------|--|
| Application No. | 10/698,217                 |  |
| Examiner        | Art Unit<br>Dennis Cordray |  |
|                 | 1731                       |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) Responsive to communication(s) filed on \_\_\_\_.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) Claim(s) 1-36 is/are pending in the application.
  - 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_ is/are allowed.
- 6) Claim(s) 1-36 is/are rejected.
- 7) Claim(s) \_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) All b) Some \* c) None of:
    1. Certified copies of the priority documents have been received.
    2. Certified copies of the priority documents have been received in Application No. \_\_\_\_.
    3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 1/26/2004.
- 4) Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) Notice of Informal Patent Application (PTO-152)
- 6) Other: \_\_\_\_.

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claims 1-6, 8-13, 20, 22-23, 25-26, 28-31 and 34-36 are rejected under 35 U.S.C. 102(b) as being anticipated by Riebel et al (5635123).

Claims 1, 3-6, 8, 26: Riebel et al discloses a composite comprising a cellulosic material, a legume-based thermosetting resin and a synthetic resin as a secondary binder (Abstract). Riebel et al also discloses that the legume can be soy protein in flour or isolate form (col 8, lines 23- 29), and that the synthetic resin can be an isocyanate or phenolic resin (col 12, lines 1-4). Riebel discloses that the legume protein molecules are hydrolyzed (col 16, lines 37-44). Riebel et al further discloses that the resin is present in an amount from about 40% to about 56%, which overlaps the claimed range (col 8, lines 37-41).

Claim 2: Riebel et al discloses that the moisture content of the composite is between 3 and 20% prior to pressure forming a product (col 6, lines 43-48).

Claim 9: Riebel et al teaches that is well known to use a phenol formaldehyde resin in fiberboard, particle board and panel board (col 1, lines 46-53).

Claims 10-13, 28-31 and 34-36: Riebel et al discloses that the secondary binder can be used in an amount from 2-20% of the dry composite particles and that the ratio

of cellulose solids to soy solids in the composite is between 0.8:1 and 1.5:1, resulting in a ratio of soy solids (protein hydrosylates):secondary binder (phenolic resin) of between 3.5:96.5 and 33:67 (col 5, lines 34-36 and col 12, lines 45-47). The disclosed composition range significantly overlaps the claimed ranges. Note that, although an isocyanate secondary binder is preferred, an isocyanate or phenolic resin can be used, as noted above.

Claims 20 and 22-23: Riebel et al discloses that a silicone defoaming agent can be added to the legume-based resin in an amount less than 8% by weight of the resin (col 10, lines 44 and 56-63), which encompasses the claimed range.

Claim 25: Riebel et al discloses that the finished board stock can be used as a laminate (col 14, lines 44-49). Riebel also discloses that the raw product is subject to surface finishing steps to produce a final finished product. It is well known to add a laminate overlay to particle board as a surface finish to produce a finished product (i.e.- laminated countertops, wall panel board).

#### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Riebel et al.

Riebel et al discloses that the leguminous material can be in various forms (e.g.- a flour, an isolate) (col 8, lines 23-29). The instant specification recites no particular advantage in using a 50:50 mixture of flour and isolate, thus it would have been obvious to one of ordinary skill in the art to use a 50:50 mixture as a functionally equivalent option.

3. Claims 14 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Riebel et al in view of Holmberg et al (4357454).

Riebel et al teaches that is well known to use a phenol formaldehyde resin in fiberboard, particle board and panel board but does not disclose that the resin comprises paraformaldehyde.

Holmberg et al discloses a binder composition comprising phenol formaldehyde that can be used with cellulosic material, such as wood chips (Abstract and col 2, lines 32-36). Holmberg et al also discloses that the aldehyde can be either formaldehyde or paraformaldehyde (col 2, lines 56-61).

There is no guidance in the instant specification that indicates any advantage in using paraformaldehyde over formaldehyde in the phenolic resin, only that paraformaldehyde is optional (p 4, par 13).

The art of Riebel et al, Holmberg et al and the instant invention are analogous as being directed to composites comprising cellulosic materials and resin binders. It would have been obvious to one of ordinary skill in the art to use paraformaldehyde in the claimed concentration range in the composition of Riebel et al in view of Holmberg et al as a functionally equivalent option.

4. Claims 16-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Riebel et al in view of Hse (Chung-Yun Hse, "Development of Phenolic Resins Co-reacted with Soy Flour Hydrozylate," Biographies and Abstracts, Forest Products Society 54<sup>th</sup> Annual Meeting, June 18-21, 2000, p22) and further in view of Wynstra et al (4182696).

Riebel et al does not disclose high methylol content phenol formaldehyde pre-polymer.

Hse discloses an OSB panel having an adhesive comprising a soy protein hydrozylate, caustic, formaldehyde and phenol. The molar ratio of formaldehyde to phenol to caustic is 1.65:1:0.65, which is similar to the disclosed composition. Hse does not disclose a high methylol content phenol formaldehyde pre-polymer.

Wynstra et al discloses a thermosetting resin molding composition comprising a fibrous material, phenol, formaldehyde and a base catalyst (col 1, lines 17-20 and col 2, lines 7-14). Wynstra et al also discloses that, under alkaline conditions, phenol and formaldehyde condense to form methylols and that a high formaldehyde to phenol mole ratio is typically used (col 1, lines 17-40). Wynstra et al further discloses that historically the process is carried out to convert substantially all of the formaldehyde to methylol (col 1, lines 41-45).

There is no guidance in the instant specification that indicates any advantage in using high methylol content phenol formaldehyde pre-polymer of any particular concentration in the phenolic resin, only that the use of high methylol content phenol formaldehyde pre-polymer is optional (p 4, par 14).

The art of Riebel et al, Hse, Wynstra et al and the instant invention are analogous as being directed to composites comprising cellulosic materials and resin binders. It would have been obvious to one of ordinary skill in the art at the time of the invention to use the claimed formaldehyde:phenol:caustic ratio and obtain a high methylol content phenol formaldehyde pre-polymer in the claimed concentration range in the composition of Riebel et al in view of Hse and further in view of Wynstra et al as a well known and functionally equivalent option.

5. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Riebel et al in view of Blizzard (4423095).

Riebel et al does not disclose coating the composite with a silicone or silane. Blizzard discloses a silicone coating composition useful for coating a substrate to provide a water resistant coating (Abstract). The art of Riebel et al, Blizzard and the instant invention are analogous as they pertain to making water resistant materials. It would have been obvious to one skilled in the art at the time of the invention to apply a silicone coating to the composite of Riebel et al in view of Blizzard to make the composite more water resistant.

6. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Riebel et al in view of Roubicek et al (3303089).

Riebel et al does not disclose felting to make a low-moisture mat. Roubicek et al teaches that felting is a standard process used to produce hardboard (col 1, lines 42-43 and 57-58). The art of Riebel et al, Roubicek et al and the instant invention are analogous as they pertain to the formation of cellulosic and resin

composites. It would have been obvious to one skilled in the art at the time of the invention to use felting to produce a low-moisture mat prior to molding the composite of Riebel et al in view of Roubicek et al as a standard and well known process.

7. Claims 27 and 32-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Riebel et al in view of Johns (4376745).

Riebel et al does not disclose that the isocyanate resin is polymeric. Riebel et al also does not disclose that the resin can be a combination of phenolic resin and isocyanate resin.

Johns discloses that a commercially popular resin for use in making particle boards is a polymeric isocyanate (col 1, lines 27-28). Johns also discloses that phenolic resins, although inexpensive, have a slow cure and require resin in excess of that normally necessary to overcome the swelling tendency of cellulose when exposed to moisture and caustic. Isocyanic resins are fast curing and can be used at approximately half of the rate of application of phenolic resins to achieve the same strength, but are expensive. The art of Riebel et al, Johns and the instant invention are analogous as being directed to the binding of cellulose materials. It would have been obvious to one of ordinary skill in the art at the time of the invention to use a polymeric isocyanate resin in the composition of Riebel et al in view of Johns as a well known functional equivalent. It would also have been obvious to use a combination of phenolic and isocyanate resins to optimize cost and strength properties of the composite.

#### ***Double Patenting***

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the

unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

8. Claims 1-36 rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1 and 5-39 of U.S. Patent No. 6719882 (hereinafter referred to '882) in view of Riebel et al. Other than the claimed amount of resin binder in Claims 1 of the instant application and '882, the claims read identically. The amount of resin binder claimed in '882 is "between about 2 and about 15% of the dry weight of the cellulosic material" whereas amount of resin binder claimed in the instant application is "less than 40% of the dry weight of the cellulosic material." Riebel et al discloses a similar composite wherein the amount of resin binder is "preferably about 40-56%." About 40% overlaps the portion of the claimed range below but still near 40% and the composite product of Riebel et al is structurally and functionally similar to the claimed composite. It would have been obvious to one skilled in the art to use about 40% by weight of binder in the composite to obtain a strong product.

***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure [D'Alelio (2315400), Talbott et al (3843756), Bornstein (4130515), Degens (4158713)]. They pertain to other composites comprising cellulosic material and binder resins and to surface additives.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dennis Cordray whose telephone number is 571-272-8244. The examiner can normally be reached on M - F, 7:30 -4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on 571-272-1189. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
DRC

  
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